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ESTIMATED 1950 SALABLE PRODUCTION OF TROPICAL FLOWERS AND FOLIAGE, TERRITORY OF HAWAII

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INTRODUCTION

Within the past two years a number of groups of growers of tropical flowers and foliage in Hawaii have been formed to study the problem of marketing their products cooperatively.

As an aid in analyzing the problem, a survey has been made of the production of tropical flowers and foliage in Hawaii. The aim of the production survey was to answer the question: "As of 1950, what was the annual salable production of tropical flowers and foliage in Hawaii"?

The following report summarizes the findings of this survey.

Cooperating in the survey were the county staffs of the Hawaii Agricultural Extension Service, and many growers and shippers.

Mrs. Richard P. Rice assisted in conducting the Oahu survey.

The figures for the island of Hawaii were obtained from a report prepared for the Industrial Research and Advisory Council by C. A. Woolard.

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TERRITORIAL SUMMARY

Since the object of this report is to arrive at a figure for total production of tropical flowers and foliage in the Territory of Hawaii, the figures for Oahu, Kauai, Maui, and Hawaii have been summarized in the following table:

Table 1.--Estimated 1950 Salable Production of Tropical Flowers and Foliage Territory of Hawaii*

Product	Oahu	Kauai	Maui	Hawaii (East only)	Total
No. of Flowers					
Anthurium	889,800	56,000	47,000	500,000	1,492,800
Bird of Paradise	214,600	700	500	19,200	235,000
Cattleya	1,100,700	34,800	16,800	231,000	1,383,300
Cypripedium	101,900	-	58	-	101,958
Dendrobium	3,357,300	153,600	5,400	-	3,516,300
Ginger, all	93,700	-	300	21,600	115,600
Heliconia, all	107,200	500	1,900	18,000	127,600
Phalaenopsis	449,400	12,000	6,000	43,200	510,600
Plumeria	4,350,000	-	265,000	-	4,615,000
Vanda Joaquim	57,950,000	4,090,800	769,000	100,800,000	163,609,800
Vanda, Strap Leaf	485,400	-	13,600	432,000	931,000
Wood Rose	25,600	-	400	8,000	34,000
No. of Leaves					
Croton	843,700	120,000	12,200	1,200,000	2,175,900
Ti, green	301,200	22,800	600	543,600	868,200
Ti, red	107,100	800	29,000	256,800	393,700

*The Kona coast and the island of Molokai were not covered in this survey.

Comments

Records of export shipments by air of Hawaiian flowers and foliage are maintained on a pound basis by the airlines, rather than on a count of individual items.

Since actual weight of vandas in an export package is approximately 30 percent of the gross package weight, and since the gross poundage by air freight is a matter of record, a fairly accurate estimate of numbers of vanda flowers exported in 1950 may be derived. On this basis, allowing 165 individual flowers to the pound, it may be said that about 12,750,000 Joaquim vanda blossoms went into export channels in 1950.1/ This was less than 8 percent of the estimated salable supply produced in 1950 in the Territory of Hawaii. No attempt has been made to estimate local consumption.

With the exception of Joaquim vandas, it is customary to include more than one variety of products in export packages. Thus, it is impossible to make an estimate of the number of items shipped in other categories.

However, taking all factors into consideration, it seems safe to say that the Territory of Hawaii even now is in a position to supply a much larger market for

1/ Estimates based on a survey of the industry by E. L. Rada and published by the University of Hawaii, March, 1951, as Agricultural Economics Report 4.

tropical flowers and foliage. Additional plantings, both in the ground and contemplated, will augment the present supply in almost all categories and in some cases will more than double present production.

With further reference to future production of tropical flowers and foliage in the Territory of Hawaii, the following table is of interest.

Table 2.--Estimated Number of Producers with Commercial or Potentially Commercial Production, 1950

	Oahu	Kauai	Maui	Hawaii	Total
Number of producers	1,061*	87	24	900	2,072
Percentage planning to expand	82	96	70	41	-
Estimated number planning to expand	870	84	17	369	1,340

*Includes hobbyists.

During the course of this survey it became increasingly apparent that producers had not given much thought to the exact number of mature plants they had or how many blossoms they could produce per plant. Part of this may be due to difference of opinion as to what constitutes a mature plant producing a salable product.

In some instances there seemed to be a reluctance to give accurate information. Due to the lack of basic data, no attempt was made to stratify, or divide the sample into size groups where the estimate was derived from a sample. Nor is there any way to determine if the samples were truly representative of the total population of flower and foliage producers. Large producers did not respond to questionnaires as well as small producers.

Because of these points mentioned above, the writer feels that the estimates presented here are only approximations; they are, if anything, too low.

Nevertheless, the survey has been worthwhile. Flower and foliage producers have been stimulated to think in terms of what Hawaii has to sell. If the tropical flower and foliage industry hopes to develop and expand markets for its products, it must know what those products are.

For information on the present export market for Hawaiian tropical flowers and foliage, the reader is referred to Agricultural Economics Report 4 by E. L. Rada, Agricultural Experiment Station, College of Agriculture, University of Hawaii, published in March, 1951.

ISLAND OF OAHU

Source of Data

Estimated annual production of tropical flowers and foliage on Oahu was obtained from two sources.

Between the months of June and September, 1950, a committee of flower growers interested in the formation of a marketing organization mailed questionnaires to 1,061 growers of tropical flowers and foliage asking, among other things, for data on plant count and annual production.

The names and addresses of the 1,061 growers of tropical flowers and foliage on Oahu were obtained from the records of the Territorial Tax Office, from three orchid societies, and from the records of commercial handlers in Honolulu.

There were 184 replies to the mailed inquiry, of which 150 were usable in estimating current production. Thirty-four replies told what varieties were being produced, but did not give plant counts.

Methods Used

The total number of growers of each variety was derived from the 184 replies, on the assumption that the replies were a representative sample of the total population of growers. For instance, 66 percent of the 184 replies indicated that they grew anthuriums. Therefore, 66 percent of the 1,061 total, or 700 growers, are estimated to be growing anthuriums. Similarly, 35 percent of the sample grew bird of paradise. Therefore, 35 percent of the 1,061, or 371 growers, are estimated to be growing bird of paradise.

The Oahu survey made no attempt to determine seasonality. The total number of mature plants was derived from the 150 usable answers out of the 184 replies. On the basis of the total number of 1,061 growers on Oahu whose production is now salable, the 150 usable answers constituted a 14 percent sample. Since 14 percent goes into 100 percent approximately seven times, multiplication of the sample data by seven gave an estimate of the total numbers of mature plants of each variety.

Annual production of flowers or leaves per plant was arbitrarily based on the experience of 13 well-informed growers. While it may be held that these per-plant production figures are low, it is believed that a substantial proportion of plant production is not suitable for sale. Since an estimate of production actually marketable was the purpose of this survey the figures for total production were derived by multiplying the total number of plants in each category, as derived from the sample, by the estimated commercially salable production per plant.

Table 3.--Estimated Salable Production of Tropical Flowers and Foliage, Island of Oahu, 1950

Product	No. of growers*	No. mature plants	Estimated production per plant per year (flowers or leaves)**	Estimated yearly production (flowers or leaves)***
No. of Flowers				
Anthurium	700	222,451	4	889,800
Bird of Paradise	371	8,941	24	214,600
Cattleya	784	366,901	3	1,100,700
Cypripedium	289	16,977	6	101,900
Dendrobium	634	69,944	48	3,357,300
Ginger, all	116	11,707	8	93,700
Heliconia, all	196	8,934	12	107,200
Phalaenopsis	467	18,724	24	449,400
Plumeria	213	870	5,000	4,350,000
Vanda Joaquim	495	689,881	84	57,950,000
Vanda, Strap Leaf	524	20,223	24	485,400
Wood Rose	64	64	400	25,600
No. of Leaves				
Croton	289	7,031	120	843,700
Ti, green	282	25,104	12	301,200
Ti, red	230	8,927	12	107,100

*Since many growers produce more than one variety of plant, they are listed under each type of plant they grow.

**The number of marketable croton leaves per plant was based upon an estimate of 12 leaves per branch, 10 branches per mature plant.

***These totals have been rounded off.

Future Intentions

Of the 184 replies to the mailed questionnaires, 150, or 82 percent, indicated plans to increase production.

ISLAND OF KAUAI

Source of Data

A survey of possible flower and foliage production on Kauai was made by the staff of the Agricultural Extension Service of the University of Hawaii during December, 1950. Questionnaires were sent to 87 known flower and foliage growers. The 24 usable answers received were the basis of the Kauai estimate of production, using the same methods employed to expand the Oahu sample.

Methods Used

Only mature plants of each variety were counted.

No attempt was made to determine seasonality of production.

In arriving at the yearly totals it was necessary to determine the average flower or leaf output per plant and then multiply this figure by the number of plants.

The estimate of output per plant was the same as that used for Oahu.

Table 4.--Estimated Salable Production of Tropical Flowers and Foliage, Island of Kauai, 1950

Product	No. of growers*	No. mature plants	Estimated production per plant per year (flowers or leaves)**	Estimated yearly production (flowers or leaves)***
No. of Flowers				
Anthurium	20	14,000	4	56,000
Bird of Paradise	3	30	24	700
Cattleya	7	11,600	3	34,800
Dendrobium	1	3,200	48	153,600
Heliconia, all	1	40	12	500
Phalaenopsis	4	500	24	12,000
Vanda Joaquim	21	48,700	84	4,090,800
No. of Leaves				
Croton	3	1,000	120	120,000
Ti, green	2	1,900	12	22,800
Ti, red	1	70	12	800

*Since many growers produce more than one variety of plant, they are listed under each type of plant they grow.

**The number of marketable croton leaves per plant was based upon an estimate of 12 leaves per branch, 10 branches per mature plant.

***These totals have been rounded off.

Future Intentions

The growers of flowers and foliage on Kauai have only recently started production and have not yet developed a market for their products. Nevertheless the potential is there and should be considered in any estimate of total possible production for the Territory.

Virtually all growers (96 percent) returning estimates plan to increase their plantings, despite the lack of markets at the present time.

Most, if not all, of the potentially salable production from Kauai is now carried on as a family enterprise on a part-time or hobby basis.

ISLAND OF MAUI

Source of Data

The estimate of annual salable production of tropical flowers and foliage on Maui was obtained by an enumeration of those growers producing commercially. Names of the commercial producers were obtained from the county agent on Maui.

Twenty-four growers were interviewed as the basis for the estimate.

Methods Used

Only mature plants in each category were counted. Estimates of the salable production per plant per year were made by the producers themselves.

Table 6.--Estimated Salable Production of Tropical Flowers and Foliage, Island of Maui, 1950

Product	No. of growers*	No. mature plants	Estimated production per plant per year (flowers or leaves)**	Estimated yearly production (flowers or leaves)***
No. of Flowers				
Anthurium	24	11,730	4	47,000
Bird of Paradise	4	124	4	500
Cattleya	18	5,600	3	16,800
Dendrobium	9	450	12	5,400
Ginger, all	1	36	(8)	300
Heliconia, all	2	160	(12)	1,900
Phalaenopsis	8	300	20	6,000
Plumeria	2	53	(5,000)	265,000
Vanda Joaquim	11	10,680	72	769,000
Vanda, Strap Leaf	11	850	16	13,600
Wood Rose	-	-	(400)	400
No. of Leaves				
Croton	2	102	(120)	12,200
Ti, green	2	51	(12)	600
Ti, red	4	2,422	(12)	29,000

*Since many growers produce more than one variety of plant, they are listed under each type of plant they grow.

**The number of marketable croton leaves per plant was based upon an estimate of 12 leaves per branch, 10 branches per mature plant.

***These totals have been rounded off.

Future Intentions

Of the producers interviewed, 70 percent signified their intention of increasing production.

In addition to the growers whose production is listed above, there are on the island of Maui many hobbyists, chiefly cattleya and anthurium fanciers, with from 300 to 750 plants apiece. The Maui county agent estimates that there are about 20 growers who raise anthuriums exclusively, with about 300 mature plants apiece.

ISLAND OF HAWAII

Source of Data

Included in this report as an appendix is a report on seasonality of flower and foliage production in east Hawaii (Volcano to Hakalau) compiled by C. A. Woolard, formerly on the staff of the College of Agriculture, Department of Agricultural Economics. From the 831 questionnaires mailed out, 297 usable answers were received.

Methods Used

The survey in east Hawaii was conducted on a different basis than were those of the other producing areas; it attempted to give some indications of seasonality rather than of annual volume. However, it is possible, by the same methods used in the Oahu survey, to derive an estimate of annual production based on conditions prevailing in April, 1950, when the east Hawaii survey was made. The table below shows estimated annual production for east Hawaii as of 1950, applying the same estimates of productivity per plant used in the Oahu estimate.

Grower forecasts of production of Jaoquim vanda and anthurium blossoms on the island of Hawaii, as shown in the appendix, are somewhat different from the estimates carried in table 5, below. Since an estimate is based on past experiences, and a forecast is an attempt to guess future production, no attempt was made to reconcile the differences.

Table 5.--Estimated Salable Production of Tropical Flowers and Foliage, Island of Hawaii, 1950

Product	No. of growers*	No. mature plants	Estimated production per plant per year (flowers or leaves)**	Estimated yearly production (flowers or leaves)***
No. of Flowers				
Anthurium	350	125,000	4	500,000
Bird of Paradise	30	800	24	19,200
Cattleya	200	77,000	3	231,000
Ginger, all	80	2,700	8	21,600
Heliconia, all	50	1,500	12	18,000
Phalaenopsis	90	1,800	24	43,200
Vanda Joaquim	700	1,200,000	84	100,800,000
Vanda, Strap Leaf	100	18,000	24	432,000
Wood Rose	50	20	400	8,000
No. of Leaves				
Croton	100	10,000	120	1,200,000
Ti, green	100	45,300	12	543,600
Ti, red	240	21,400	12	256,800

*Since many growers produce more than one variety of plant, they are listed under each type of plant they grow.

**The number of marketable croton leaves per plant was based upon an estimate of 12 leaves per branch, 10 branches per mature plant.

***These totals have been rounded off.

Future Intentions

The reader is cautioned to remember that growers in east Hawaii in April, 1950, had many young plants of each variety planted but not yet in production. As these plants mature, production will increase. In many categories young, non-producing plants far outnumbered the mature plants used as the basis for this estimate.

Forty-one percent of the growers in the sample indicated they intended to increase production.

APPENDIX

Flower and Foliage Production
East Hawaii (Volcano to Hakalau)

By C. A. Woolard, College of Agriculture, University of Hawaii, June, 1950

This survey was made during April, 1950. The objective was to estimate plantings and monthly production for 18 selected flowers and foliage leaves of commercial significance as export items from the island of Hawaii. Information was sought by distributing a production questionnaire to all known flower and foliage producers through established florists and shippers in Hilo. Radio and newspaper appeals were made over a 10-day period to all flower and foliage producers in the area asking them to obtain and complete the questionnaire forms. Lists of producers receiving the questionnaire were preserved by the firms and by individuals assisting in the distribution. At the end of the 10-day period, 831 questionnaires had been distributed by this method. Self-addressed envelopes were provided for mailing the complete return direct to the Agricultural Extension Service office in Hilo.

The distribution of the questionnaires began on April 21. By May 12, 328 completed returns had been received, of which 297 were found usable for production data. Using these 297 returns as a sample, and estimating 900 growers in the area, the following data on present plantings, April, 1950, production, and forecast production were computed. In the summaries, growers are listed under each type of flower produced in quantity--e.g., a vanda and anthurium grower was listed in each category.

Vandas, Joaquim (700 Growers)

No. of plants in production	Planted, but not yet in production	Apr. '50 estimated production	July '50 production forecast	Oct. '50 production forecast	Jan. '51 production forecast	Apr. '51 production forecast
		Blossoms	Blossoms	Blossoms	Blossoms	Blossoms
1,200,000	1,400,000	2,900,000	4,100,000	3,700,000	3,800,000	5,000,000

The seasonal increase in production of vandas normally expected during summer months is apparently augmented by new plantings coming into production this year. Not all of the vandas produced are suitable for shipment. Estimated shipments for April amounted to 1,040,000 blossoms, approximately 36 percent of total production.

Anthuriums (350 Growers)

No. of plants in production	Planted, but not yet in production	Apr. '50 estimated production	July '50 production forecast	Oct. '50 production forecast	Jan. '51 production forecast	Apr. '51 production forecast
		Blossoms	Blossoms	Blossoms	Blossoms	Blossoms
125,000	153,000	44,000	55,000	68,000	75,000	99,000

No marked seasonality of yield was reported for anthuriums.

Data on the remaining 16 items surveyed were not sufficiently complete to forecast production. The following table shows the number of growers, plants in production, plants not yet in production, and April, 1950, estimated production of 14 items.

Statistics on Number of Growers, Plants, and Production of 14 Flower and Foliage Plants

Flowers or foliage	No. of growers	No. of plants in production	No. of plants not yet in production	April 1950 est. production, blossoms or leaves
Vanda Hybrids	100	18,000	34,000	194,000
Cattleyas	200	77,000	52,000	62,000
Phalaenopsis	90	1,800	2,800	1,900
Red Ginger	30	1,600	2,200	800
Torch Ginger	30	800	400	300
Shell Ginger	20	300	600	200
Wood Rose	50	20	1,200	1,700
Heliconia	50	1,500	900	900
Bird of Paradise	30	800	54,000	250
Philodendron	10	300	100	300
Ti, red	110	1,900	4,600	9,300
Ti, variegated	130	19,500	33,700	97,600
Ti, green	100	45,300	11,300	226,500
Croton	100	10,000	12,000	65,000

It is estimated that about 1,400 persons are engaged in the production end of the industry. Most flower growing in the area is conducted as a family enterprise or hobby, on residential property.

An estimated 112 acres are used in flower production. No breakdown as to acreage devoted to particular varieties of flowers was included in the returns.

Forty-one percent of the growers surveyed announced definite plans to expand their plantings of Joaquim vandas, vanda hybrids, and anthuriums. Planting intentions in the future indicate that Joaquim vanda plantings will be increased by 2,380,000 plants, vanda hybrids by 127,000, and anthuriums by 360,000.

Fifty-nine percent of the growers stated they had no intention of expanding production. In reply to specific questions as to their reasons for not expanding, 32 percent gave lack of land, 33 percent lack of capital or credit, 29 percent market uncertainty, and 6 percent pest and disease trouble.

Membership is voluntary, but growers, retailers, and wholesalers dealing on the market must obtain a permit to do so from the Association, and operating monies are collected from each floral sale. The Association does very little advertising, its principal function being to maintain business ethics in selling-buying relationships and credit transactions.

A trade association with wide influence on a national scale is the Colorado Carnation Growers' Association. This Association is one of the few organized floricultural groups attempting to influence price by stimulating demand and controlling supply of its product. Five Denver wholesale houses are the heart of the Colorado carnation industry, performing all of the marketing functions for the grower-members, who own stock in the wholesale firms on the basis of the number of square feet of greenhouse area each grower operates. Strict grades have been established, and the Colorado carnation is considered one of the finest quality carnations available. Colorado labels are attached to each bunch, and every fourth carnation of the upper three grades is identified by a small labeled tab to prevent misrepresentation. Two levels of prices are established--a summer price and a higher winter price. The price level is generally 4 to 8 cents apiece more than that of any competitive carnation in the market. Some dumping occurs to maintain the price, but any dumping is prorated among all growers of a given wholesale house according to the grade discarded. Most of the carnations are sold on order before they are harvested. The wholesale houses also provide soil testing services for their members for a small fee. The Association conducts a continuous advertising campaign, expending approximately $60,000 a year, in both consumer and trade publications. Membership in the association is voluntary. Cooperation did not become effective until after a disastrous depression experience in the 1930's.

A basic characteristic of mainland floral organizations is that membership is voluntary. Economic regulations are primarily devoted to business ethics, and other regulations are generally ineffective unless the association is strong enough to keep its membership in line.

A Hawaiian organization need not follow the pattern of any mainland floral organization. Numerous other organizations and associations involved in the marketing of other agricultural products are successfully operating on the Mainland. An analysis of the structure and operating mechanism of successful agricultural marketing organizations would be of value prior to the formation of any Hawaiian marketing organization.